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Author(s): Susan Kent

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Cause and Effect of Dental Health, Diet, and Status among Foragers

SUSAN KENT
Anthropology Program
Old Dominion University

In a particularly interesting and innovative article, Walker and Hewlett (1990) examine the dentition of various Pygmy groups. A statistically significant difference was discovered in the dental health of the leaders. They suggest that appearance of teeth may be socially significant (Pygmies practice artificial tooth modification) and propose that men with good dentition may be more likely to achieve leadership status than men with many missing and carious teeth. Further, leaders' social status may have resulted in their receiving more gifts of meat than nonleaders, and, therefore, dietary differences might be related to a person's social status in what is supposedly an egalitarian society (i.e., people consume fewer carbohydrates if more meat is available, which would tend to promote dental health).

There is, however, another possible cause of the difference in dentition among leaders that was not addressed by Walker and Hewlett. Leaders may attain their status because they are better hunters, and because they are better hunters, they may have more access to meat, and therefore have better dentition. In other words, the fact that they are better hunters may put them in a leadership position; the correlation between leadership and good dentition might be only a by-product of the association between hunting skills and dentition. Walker and Hewlett actually imply this might be the case when they write that the leadership position is usually occupied by one of the oldest active males and that a new leader emerges when the current one no longer makes consistent contributions to the camp through actively hunting, among other things (1990:385). The question we need to answer is whether it is leadership (i.e., status) or hunting skill that is reflected in the health of the teeth.

Leaders among different Pygmy groups are informal and ephemeral. Among Efe, "one or two adults, generally men, . . . seem to be

looked to as natural leaders by other group members. However, they do not generally have the power to make decisions which go against the wishes of a majority of group members" (Peacock 1985:46). Elsewhere, the best net-hunters have greater authority than those who are less skilled (Turnbull 1965:246). Mbuti hunters who can kill elephants (*tûma*) gain fame and status, become the leaders of spear-hunting expeditions, attract others to the band, and influence the reputation of the group (Harako 1981:544–545). Between villagers and Mbuti bands, the "leadership of the *tûma* becomes more overt, in part because he acts as negotiator in economic and social contexts" (Harako 1981:545). There appears to be a link between successful hunting of large animals and leadership. Is it possible that there exists a comparable link between successful hunting of small and medium-sized animals and the *kombeti* leadership position?

Walker and Hewlett posit two explanations to account for differences in dentition between leaders and nonleaders. One is that men achieve the status of informal leader by virtue of having healthy teeth. This proposition is difficult to assess. We need to know whether both male and female Pygmies consider good dentition an indirect factor for leadership; whether decayed or lost teeth are incisors or molars, the latter being less visible; and whether or not the leaders examined had tooth decay before or after assuming their position, which occurs relatively late in life. All of this still does not account for why some men have better dentition than others. We know only that those with good teeth may become leaders (i.e., is it a spurious or causal correlation?). A second explanation is proposed by the authors: leaders may consume more meat and fewer carbohydrates because of the social networks they are tied into as a consequence of their social status. This proposition is also difficult to evaluate. We need to know at what age tooth decay and loss first occur, since men are usually 45 years of age or older when they become leaders (Walker and Hewlett 1990:385). For leaders to have better dentition solely as a result of their position, dental health would have to significantly change from that of the general male population around age 40. In order to test this proposition, we also need to determine how much

more meat leaders consume than nonleaders as a direct result of their status; whether they share meat they receive with their wives, children, and relatives (presumably equalizing the amount of meat consumed); whether, because of their status, they are required to give more meat away; and whether there are leaders who are poor hunters, and, if so, what the state of their dentition is.

I suggest a third explanation that might be easier to test. Perhaps the best hunters obtain the most meat, which results in healthy dentition. Because of their skill in hunting, they are more likely to become leaders. The state of a man's teeth might be irrelevant to the attainment of leadership and only be a side effect of his hunting skill. The status of a man might also be irrelevant to whether or not he has healthy teeth. Instead, leaders have better dentition even though they acquire their status relatively late in life because they are the most skilled hunters. Men who are consistently good hunters would consistently have meat and therefore good dentition, regardless of the age at which they assume a leadership position. Another interesting avenue for future inquiry is to what extent such men rely on villagers' carbohydrates; that is, do they consume more or fewer carbohydrates than less skilled hunters? This proposition can be easily tested, perhaps with data Walker and Hewlett already have. One would only have to group the men according to hunting skill, amount of carbohydrates consumed, and status, and test for a significant difference in dentition.

If, in fact, better hunters tend to be leaders, a number of difficulties with the other explanations are resolved. For example, with the propositions offered by Walker and Hewlett, leaders must maintain their status long enough for major differences in dentition to occur. If the best hunters tend to be the leaders, and they also tend to have more access to meat because of their hunting skill, they would tend to have better dentition even late in life, when individuals are likely to assume the status of leader. The apparent contradiction Walker and Hewlett noted about dental health in a supposedly egalitarian society being based on one's status (1990:396) may not be a contradiction after all, since health may not be based on status but instead on hunting skill, in a still essentially egalitarian society.

Walker and Hewlett have presented some fascinating data that demand our attention. I hope that by postulating a third explanation for the patterns they delineated I have been able to account for both the patterns in the data and the difficulties that arise from the

original explanations posited. The significance of their findings goes beyond the archeological concerns that they noted, but also involves issues of egalitarianism, status, and leadership in contemporary hunter-gatherer societies.

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Social Status and Dental Health among the Aka and Mbuti Pygmies

BARRY S. HEWLETT
Department of Anthropology
Tulane University

PHILLIP L. WALKER
Department of Anthropology
University of California, Santa Barbara

Susan Kent asks some worthwhile questions about our interpretation of the data we collected on African Pygmy dental health. We found a statistical relationship between social status (i.e., leadership position) and dental health and offered two possible explanations. She summarizes these in her comment. Kent